

# **CONSTRUCTION**

## **INSTRUCTOR GUIDE**

FEDERAL ACQUISITION INSTITUTE  
CURRICULUM OF PROCUREMENT  
TRAINING COURSES  
CURRENT THROUGH  
FAC 90-26

**OFFICE OF ACQUISITION POLICY**  
**GENERAL SERVICES ADMINISTRATION**

**TOPIC: 4.5 PREPARE FOR PRECONSTRUCTION CONFERENCE**

**Ref:** Pages 4-20 to 4-24

**Objective:** Upon completion of this lesson topic students should be able to prepare for a Preconstruction Conference:

- \* Determine if one is to be held. Establish the date.
- \* Identify any approvals or submissions required prior to the conference.
- \* Prepare agenda.
- \* Identify and notify all attendees.



**Time:** 10:20 - 10:40

**Method:** Directed Discussion

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**LESSON PLAN**

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REF	STEPS IN PRESENTING THE TOPIC	INSTRUCTOR NOTES
	<b>4.5 PREPARE FOR PRECONSTRUCTION CONFERENCE</b>  FAR 36.212* refers to preconstruction orientation of contractors.	
	<ul style="list-style-type: none"><li>• <b><u>Question:</u></b> "What would be the reasons for preconstruction orientation, which, can be either an explanatory letter or a preconstruction conference?" [Solicit answers from the class before providing your own]  <b><u>Answer:</u></b> <b>Preconstruction Orientation aids both the Government and contractor to:</b><ul style="list-style-type: none"><li>* <b>Achieve a clear and mutual understanding of contract requirements, and</b></li><li>* <b>Identify and resolve potential problems.</b></li></ul></li></ul>	
	<b>*Note:</b> "The Contracting Officer will inform the successful offeror of ...statutory matters such as labor standards and subcontracting plan requirements and ...who has authority to decide matters such as contractual, administrative, and construction responsibilities."	

Ref.	Steps In Presenting The Topic	Instructor Notes
<div data-bbox="191 285 272 363" data-label="Image"></div>	<ul style="list-style-type: none"> <li> <b>Question:</b>            What is the purpose of the Copeland Act?   <b>Answer:</b>            Prohibit contractors from demanding and receiving kickbacks from their employees.             The Davis-Bacon Act covers only public works construction contracts in excess of \$2,000. The Copeland Act covers not only those employees covered by the Davis Bacon Act but ALL employees on public works, including those financed in whole, or in part by loans, grants, etc., from the Federal Government.             The Copeland Act requires that a "Statement of Compliance" be submitted with each payroll attesting to the accuracy of payroll data and adherence to the labor statutes.         </li> </ul>	
<div data-bbox="191 1010 272 1087" data-label="Image"></div> <p>240 U.S.C. 327 (1988)</p>	<ul style="list-style-type: none"> <li> <b>Question:</b>            Ask the class to describe the provisions of the Contract Work-Hours and Safety Standards Act, which is applicable to all construction contracts.         </li> </ul>	

Ref.	Steps In Presenting The Topic	Instructor Notes
	<p style="text-align: center;"><b>CLASSROOM EXERCISE CE-6.2</b></p> <p style="text-align: center;"><b>"PAYMENT INVOICE"</b> <b>(THREE PARTS)</b></p> <p><b>Method:</b> Group Exercise</p> <p><b>Purpose:</b> To give students practice in reviewing and approving invoices for payment.</p> <p><b>Introduction:</b> The payment invoice exercise is broken down into three segments which will be referred to as Parts A, B, and C.</p> <ul style="list-style-type: none"> <li>• Part A consists of a review of a Schedule of Prices which the contractor has submitted.</li> <li>• Parts B and C introduce the contractor's invoices which must be reviewed and approved.</li> </ul> <p>Prior to completing each one of the exercises, students should review the information material which is supplied.</p> <p><b>Instruction:</b> Instruct students to form into small groups and appoint a person within their group as the Contracting Officer. The findings of the group should be a consensus of the group. Tell them that the individual appointed as group leader will play the role of Contracting Officer and will be the decision maker of the group on matters which would, in a real life situation, need the concurrence of a Contracting Officer, or in matters in which the group may not all agree.</p>	<p><b>NOTE: This Schedule of Prices for the ACE Construction Company is not related to the ACE bid of over \$1.1 million used in Lesson 3.</b></p>

Ref.	Steps In Presenting The Topic	Instructor Notes
	<p style="text-align: center;"><b>INSTRUCTION</b></p> <p style="text-align: center;"><b>CE-6.2, PART A</b></p> <p style="text-align: center;"><b><u>SCHEDULE OF PRICES REVIEW</u></b></p> <p>Part A is a thorough review of the Schedule of Prices. The groups are to review the Schedule of Prices Check List and note any deficiencies in the Schedule of Prices submitted by the Contractor.</p> <p>Tell the groups to record their findings on the Summary Sheet and be prepared to discuss their findings at the conclusion of the exercise.</p> <p><b>Given:</b></p> <p>On January 21, 1991, ACE Construction Company forwarded to you the Schedule of Prices for your approval. (The contract was awarded January 6, 1991.)</p> <p><b>General Information:</b></p> <p>The form or the manner in which the contractor submits the schedule is agency specific. The form used in this exercise is a generic one, but similar ones will probably contain the same basic information.</p> <p><b>Call students attention to the following:</b></p> <ol style="list-style-type: none"> <li>1. Part I of the form contains general and contractual information with the approval signature. Check for appropriate signature.</li> <li>2. Part II, Block 12; Review in detail, with special attention to: <ol style="list-style-type: none"> <li>(a) Arithmetic and total + contract price.</li> <li>(b) Units of issue should be correct and measurable in the field, i.e. LF of pipe vs pounds.</li> <li>(c) Prices should not be front end loaded.</li> <li>(d) What action is needed on items described in the schedule as "Move on," "Quality Control," "Misc. Patch," and "Cleanup"?</li> </ol> </li> </ol>	

Ref.	Steps In Presenting The Topic	Instructor Notes
	<p style="text-align: center;"><b>INSTRUCTION</b></p> <p style="text-align: center;"><b>CE-6.2, PART A</b></p> <p style="text-align: center;"><b><u>SCHEDULE OF PRICES REVIEW</u></b> <b>(cont.)</b></p> <p style="text-align: center;"><b><u>Schedule of Prices Check List</u></b></p> <p>PART I (Completed by the contractor)</p> <ul style="list-style-type: none"> <li>(a) Verify correctness of the information in first three Blocks.</li> <li>(b) Assure that the signature in fourth Block is authorized. (President, Vice-President, Project Manager, etc.)</li> </ul> <p>PART II (Blocks 1 - 11 to be completed by the Gov't.)</p> <ul style="list-style-type: none"> <li>(a) Verify correct data input in Blocks 1-9.</li> <li>(b) Block 10 to be completed by the reviewing official.</li> <li>(c) Block 11 to be signed by approving official.</li> </ul> <p>PART II (Block 12 to be completed by the contractor.)</p> <ul style="list-style-type: none"> <li>(a) General organization category codes listed in the specifications section "General Paragraphs".</li> <li>(b) Check to verify that items for the prime contractor accomplishment total at least 20% of contract value. (In accordance with the "Performance by Contractor" clause.)</li> <li>(c) Check the arithmetic. <ul style="list-style-type: none"> <li>* Horizontal multiplication and addition.</li> <li>* Vertical addition.</li> <li>* Total vs. contract price.</li> </ul> </li> </ul>	

Ref.	Steps In Presenting The Topic	Instructor Notes
	<p style="text-align: center;"><b>INSTRUCTION</b></p> <p style="text-align: center;"><b>CE-6.2, PART A</b></p> <p style="text-align: center;"><b><u>SCHEDULE OF PRICES REVIEW</u></b> <b>(cont.)</b></p> <p>(d) Check units of issue and pricing.</p> <ul style="list-style-type: none"> <li>* Quantities must be consistent with the Government estimate.</li> <li>* Related items must be consistent in quantity.(i.e, number of doors should be consistent with the doorknobs to be used on the doors.)</li> <li>* Units of issue should also be consistent with appropriateness of the type of work (i.e., SF of paint listed in lieu of gallons).</li> <li>* Disallow amounts listed as "lump sum" unless for minor items. (It is too difficult to assess progress for lump sum costs.)</li> <li>* Look for a proper balance between labor and material costs (i.e., 40/60 vice 60/40).</li> <li>* Evaluate unit labor and material prices. Do they appear to be reasonable/accurate?</li> </ul> <p>(e) Any omissions or duplications? (These can easily occur when mobe , demobe are allowed. Also watch carefully earthwork and foundations.)</p> <p>(f) Look for "front loading" of costs. (i.e., prices for work to be accomplished early in the project which are "puffed up" to provide more cash flow.)</p> <p>(g) Have costs for items been unbalanced? (This is particularly meaningful for indefinite quantity contracts when contractors may be second guessing the amounts to ordered.)</p> <p>(h) Mobilization costs. Must be authorized. If so, also allow demobilization.</p> <p>(i) Premiums for Bonds. They must be billed as a separate item. Contractor must provide evidence of full payment to the surety. (Canceled check will do.)</p>	

Ref.	Steps In Presenting The Topic	Instructor Notes
	<p style="text-align: center;"><b>INSTRUCTION</b></p> <p style="text-align: center;"><b>CE-6.2, PART A</b></p> <p style="text-align: center;"><b><u>SCHEDULE OF PRICES REVIEW</u></b> <b>(cont.)</b></p> <ul style="list-style-type: none"> <li>(j) Nonmeasurable items such as overhead and profit must be spread over ALL measurable work activities, and not included as separate items.</li> <li>(k) The overall intent is to approve a Schedule of Prices which will permit accurate payments via ability to easily measure the field progress for each item, or activity listed and quantify payment amounts. (It is to the contractor's advantage to break down the schedule as much as possible so that we can recognize progress, however slight, and pay for it.)</li> </ul>	





**INSTRUCTOR'S KEY TO  
PAYMENT INVOICE EXERCISE, PART A  
CE-6.2**

**SUMMARY ANSWER SHEET**

Review of the Schedule of Prices should result in the locating the following discrepancies:

- ① Incomplete signature block.
- ② Submitted late. (Should be within 5 days of date of contract.).
- ③ Front end loaded prices. Bond must be a separate item.
- ④ Wrong extended price. Should be \$1900.
- ⑤ "Raise manholes." Priced out as one job. Should be broken out, i.e., 2 ea manholes, unit cost of \$200, total of \$400 for material. Labor  $\$300 \times 2 = \$600$ . Total would be \$1,000.
- ⑥ Unit of issue is wrong. (Items 5, 6, 7, 14, 19)
- ⑦ Wood Doors: Labor cost included for only one door.
- ⑧ CQC, Field Trailer, Pick-up Truck, and Miscellaneous items cannot be included as separate line items as they are accounted for as overhead. (These should have been pro-rated and extended over the entire Schedule of Prices.)
- ⑨ Wrong total.



Ref.	Steps In Presenting The Topic	Instructor Notes
	<p style="text-align: center;"><b>INSTRUCTION</b></p> <p style="text-align: center;"><b>CE-6.2, PART B</b></p> <p style="text-align: center;"><b><u>FIRST PAYMENT REVIEW</u></b></p> <p><b>Given:</b> Your construction representative gives you the "Field Pay Estimate Worksheets" shown as CE-6.2. These prices are based on the solutions to Part "A" of the exercise. <u>All percentages have been agreed upon</u> with the contractor's superintendent.</p> <p>On March 3, 1991, the contractor submits an invoice.</p> <p><b>Required:</b> Complete Invoice form provided in CE-6.2 taking the following into consideration:</p> <ol style="list-style-type: none"> <li>1. Assume that the <u>contractor agrees to the amount as shown</u> on the Field Pay Estimate Worksheet.</li> <li>2. The first invoice paid \$1,900 for bonds only.</li> <li>3. For retention, assume that the prime contractor is on schedule and no problems have arisen on the job.</li> <li>4. There is a 15 day delay in contract start for Performance and Payment bond approval.</li> </ol>	<p><b>(Note that overhead items have been deleted.)</b></p>



**INSTRUCTOR'S KEY**  
**CE-6.2, PART B**  
**CONTRACTOR'S INVOICE**

INVOICE DATE MAR 2, 1991  
INVOICE NUMBER 2

**FROM:**

**TO:** Construction Contract Administration Office

**VIA:**

1. Below is a Statement of Performance under Contract 47408-90-C-492 at (Station):

Contracting Office, Seaside, CA

The enclosure provides breakdown of this statement of performance.

A.	Total value of contract through change	\$	<u>181,089</u>
B.	Percentage of performance complete		<u>22.6%</u>
C.	Value of completed Performance	\$	<u>40,923</u>
D.	Less: Total of prior invoices (Bonds)	\$	<u>1,900</u>
E.	Amount this invoice	\$	<u>39,023</u>

Signature and Title \_\_\_\_\_

**FIRST ENDORSEMENT**

Date: MAR 1, 1991

**FROM:** Construction Office, Seaside, CA

**TO:** Payment Center

1. Payment is recommended as follows:

A.	Amount of work completed to	<u>Mar 2, 1991</u>	\$	<u>40,923</u>
B.	Less:			
	Retention		\$	<u>0</u>
	Other Deductions	\$ <u>NONE</u>	\$	<u></u>
C.	Sub-total		\$	<u>40,923</u>
D.	Less previous payments		\$	<u>1,900</u>
E.	Recommended amount for	<u>2nd</u> payment.	\$	<u>39,023</u>

2. Elapsed contract time 40%

**3. INSTRUCTOR COMMENTS:**

Contract awarded Jan 6 + 15 days for (Performance and Payment Bond approval = Jan 21 - Mar 2

$\frac{40}{100} = 40\%$

Pursuant to authority vested in me, I certify that this invoice is correct and proper for payment.

Date \_\_\_\_\_

Signature and Title \_\_\_\_\_

<sup>1</sup>Authorized Certifying Official

ACRN	APPN/SUBHEAD	OC	BCN	SA	AAA	IT	PAA	COST CODE	AMOUNT
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**INSTRUCTOR'S KEY**  
**CE-6.2, PART B**  
**CONTRACTOR'S INVOICE**

**Additional Information for the Instructor**

**Payment for Materials:**


- \* On Site Materials (but not installed.)  
You may authorize on-site materials. However, the contractor must produce a paid invoice indicating how much was paid, and when it was paid. *(The reviewer must be sure that the contractor has clear title. In addition, the contractor must demonstrate that he has established procedures to protect, control, and account for this material.)*
- \* Materials Stored Off-Site.  
Not authorized unless allowed in the General or Additional General Provisions of the specification. If authorized the following rules apply:
  1. Material will be stored in a reasonable proximity to the job site.
  2. Transportation hazards to the job site must be minimized. *(Once the Government authorizes payment, the Government OWNS the material. Therefore we must be sensitive to see to it that the material is protected.)*
  3. Contractor must demonstrate clear title to the material.
  4. Materials are insured and protected from theft and the elements.
  5. Materials must not be susceptible to deterioration or damage. *(Plate glass would not be a good risk, neither would concrete mix if it is to be stored through the winter months.)*
  6. No material is to be paid for if it is in transit. *(Precludes any "the checks in the mail" situations from happening.)*

**Payment for Bonds:**

- \* Payment for bonds may be authorized.  
Check calculations. Review the bonds which were issued and verify cost. *(You will find it listed on the back side of the Performance Bond.) (In this case it is \$1900.)*  
Require evidence that the bonding company has been paid. *(Receipt.)*

**Administrative Procedures:**

- \* Contractor's Invoice and Attachments: When an invoice is received it should be accompanied by the following:
  1. Annotated Contractor Performance Statement. This may be accomplished by using a copy of the Schedule of Prices, marked up and annotated with progress. It could also be in the form of a computer generated report or some similar document. It should also contain the Government Inspector's (Conrep's) concurrence. (Rely on agency procedures.) Some agencies require a separate report to be filed by the Government representative or inspector.
  2. Progress Chart Update. This should reflect the contractor's best estimate of its schedule.
  3. The invoice should also be accompanied by a Certification that:
    - The amounts are only for work performed.
    - Subcontractors have been paid, and
    - The invoice does not include any amounts that are being withheld from a subcontractor.

Ref.	Steps In Presenting The Topic	Instructor Notes
	<p style="text-align: center;"><b>INSTRUCTION</b></p> <p style="text-align: center;"><b>CE-6.2, PART C</b></p> <p style="text-align: center;"><b><u>SECOND PAYMENT REVIEW</u></b></p> <p>On April 3, 1991, your construction representative gives you the "Field Pay Estimate Worksheet. These prices are based upon the corrected Schedule of Prices which are provided in the exercise. <u>All percentages have been agreed upon</u> with the contractor's superintendent.</p>	
	<p><b>Note:</b> Prior to proceeding with the exercise go over the information provided on the next page regarding retainage accumulation.</p>	
	<p>On April 5, 1991, the contractor submits an invoice with his Contractors Performance Statements as justification for his invoice.</p> <p>You are required to complete the Invoice form taking the following into consideration:</p> <ul style="list-style-type: none"> <li>* Assume that there is a disagreement between the Contracting Officer and the contractor for work not satisfactory in accordance with plans and specifications.</li> <li>* Also the contractor has underpaid an employee \$200.00.</li> </ul> <p>At the conclusion of the allotted time for Part "C", ask each spokesperson to report their findings, rotate the answers among the groups. Discuss the correct answers using the Key to the Exercise.</p>	



# INSTRUCTOR'S LESSON

## RETAINAGE ACCUMULATES

### CE-6.2, PART C

**EXAMPLE:**

Given: \$100,000 contract - 50% complete and paid to date.

The next Invoice is for:	\$10,000	
Completed work in place (WIP)	\$60,000	
Less	<u>1,000</u>	10% Retention for poor workmanship
	\$59,000	
Less	<u>50,000</u>	Prior payments
	\$ 9,000	
The next invoice is also for	\$10,000	
Completed work in place (WIP)	\$70,000	
Less (1000 +1000 carryover)	<u>2,000</u>	10% Retention for poor workmanship
	\$68,000	
Less	<u>59,000</u>	Prior payments
	\$ 9,000	
The next invoice is also for	\$20,000	
Completed work in place (WIP)	\$90,000	
Less (2000+2000 carryover)	<u>4,000</u>	10% Retention for poor workmanship
	\$86,000	
Less	<u>68,000</u>	Prior payments
	\$18,000	
Completed work in place	\$90,000	
Paid to date	\$86,000	

## CE-6.2, PART C

### CONTRACTOR'S INVOICE

INVOICE DATE APR 5, 1991  
INVOICE NUMBER 3

**FROM:**

**TO:** Construction Contract Administration Office

**VIA:**

1. Below is a Statement of Performance under Contract 47408-90-C-492 at (Station):

Contracting Office, Seaside, CA

The enclosure provides breakdown of this statement of performance.

A.	Total value of contract through change	\$	<u>181,089</u>
B.	Percentage of performance complete		<u>45.5%</u>
C.	Value of completed Performance	\$	<u>82,446</u>
D.	Less: Total of prior invoices	\$	<u>40,923</u>
E.	Amount this invoice	\$	<u>41,523</u>

Signature and Title \_\_\_\_\_

#### TO BE COMPLETED BY STUDENT

**FIRST ENDORSEMENT**

Date: \_\_\_\_\_

**FROM:** Construction Office, Port Hueneme, CA

**TO:** Payment Center

1. Payment is recommended as follows:

A.	Amount of work completed to	<u>APR 4, 1991</u>	\$	_____
B.	Less:			
	Retention		\$	_____
	Other Deductions	\$	_____	_____
C.	Sub-total		\$	_____
D.	Less previous payments		\$	_____
E.	Recommended amount for	_____ payment.	\$	_____

2. Elapsed contract time \_\_\_\_\_%

3.

Signature and Title \_\_\_\_\_

Pursuant to authority vested in me, I certify that this invoice is correct and proper for payment.

Date \_\_\_\_\_

Signature and Title \_\_\_\_\_

<sup>1</sup>Authorized Certifying Official

ACRN   APPN/SUBHEAD   OC   BCN   SA   AAA   TT   PAA   COST CODE   AMOUNT



# CE-6.2

## SCHEDULE OF PRICES FOR CONSTRUCTION CONTRACT

### AS CORRECTED

PART I/(To be completed by contractor)

ACTIVITY AND LOCATION

Contracts Office, Seaside, CA

TITLE OF CONTRACT AND SITE LOCATION

Construction Access Road to Bldg. 560, Seaside, CA

NAME AND ADDRESS OF CONTRACTOR

ACE Construction Company

SIGNATURE AND TITLE OF CONTRACTOR'S AGENT

*J.M. Davis*

**J. M. DAVIS, Owner, ACE Construction Company**

PART II (To be completed by Government)

1. CONTRACT NO. <b>47408-90-C-492</b>	2. DATE OF CONTRACT <b>JAN 6, 1991</b>	3. CONTRACT PRICE <b>\$181,089</b>	4. 2ND LOW BID <b>\$185,370</b>	5. HIGH BID <b>\$208,499</b>	6. NO. OF BIDDERS <b>4</b>
7. ALLOTMENT OR ALLOCATION NO.	8. APPROPRIATION TITLE				
9. TIME FOR COMPLETION (Hours) <b>100 days</b>	10. REVIEWED & FORWARDED (Date)	11. SIGNATURE OF CONTRACTING OFFICER			

12.a.		c. QUANTITIES		d. MATERIAL COST		e. LABOR COST		f. TOTAL COST
ITEM NO.	B. DESCRIPTION OF ITEM	NO. OF UNITS	UNIT	UNIT COST	COST	UNIT COST	COST	
1.	<u>Bond</u>	L. S.			1,900			1,900
2.	Demolition:	530	TON	0	0	8	4,240	4,240
3.	Remove Asphalt	9	EA	0	0	23	207	207
4.	Raise Manholes	2	EA	200	400	300	600	1,000
	<u>Sitework:</u>							
5.	Import Fill	500	CY	13.8	6,900	0.2	100	7,000
6.	Grade & Compact	50,000	SF	0	0	0.18	9,000	9,000
7.	Asphalt Paving	48,000	SF	1.01	48,480	0.18	8,640	57,120
8.	Striping	L.S.		170	170	1,700	1,700	1,870
9.	Post Mounted SN	2	EA	170	340	56	112	452
10.	Chain Link Fence	115	LF	60	6,900	24	2,760	9,660
	<u>Concrete:</u>							
11.	Foundation	1	EA	1,795	1,795	1,680	1,680	3,475
12.	Textured Concrete	1,660	SF	2	3,320	3.5	5,810	9,130
13.	Catch Basin	1	EA	3,600	3,600	1,300	1,300	4,900
14.	Concrete Band	235	LF	2.3	540.5	12	2,820	3,360.5
15.	Sidewalk & Ramp	350	SF	1.14	399	4.5	1,575	1,974
16.	Curb & Gutter	240	LF	4.78	1,148	20	4,800	5,948.33
17.	Curbs	212	LF	4.5	954	10	2,120	3,074
	<u>Structural</u>							
18.	Masonry	270	SF	6.8	1,836	12	3,240	5,076
19.	Structural Steel	100	LBS	1.15	115	2	200	315
20.	Misc. Metals	L.S.		227	227	113	113	340
21.	Rough Carpentry	500	BF	3.4	1,700	2	1,000	2,700
22.	Finish Carpentry	L.S.		1,022	1,022	1,360	1,360	2,382
23.	Cabinets/Counter		EA	1,136	1,136	200	200	1,336
24.	Shake Roof	288	SF	2.8	806.4	4.5	1,296	2,102.4
25.	Sheet Metal	62	LF	0.6	37.2	1	62	99.2
26.	Sealants	L.S.		170	170	100	100	270

# CE-6.2

## SCHEDULE OF PRICES FOR CONSTRUCTION CONTRACT AS CORRECTED

PART I (To be completed by contractor)								
ACTIVITY AND LOCATION								
Contracts Office, Seaside, CA								
TITLE OF CONTRACT AND SITE LOCATION								
Construct Access Road to Bldg. 560								
NAME AND ADDRESS OF CONTRACTOR								
ACE Construction Company								
SIGNATURE AND TITLE OF CONTRACTOR'S AGENT								
<div style="display: flex; justify-content: space-between;"> <span><i>J.M. Davis</i></span> <span>J.M. DAVIS, Owner, ACE Construction</span> </div>								
PART II (To be completed by Government)								
1. CONTRACT NO.	2. DATE OF CONTRACT	3. CONTRACT PRICE	4. 2ND LOW BID	5. HIGH BID	6. NO OF BIDDERS			
47408-90-C-492	JAN 6, 91	\$181,089	\$185,370	\$208,499	4			
7. ALLOTMENT OR ALLOCATION NO.		8. APPROPRIATION TITLE						
9. TIME FOR COMPLETION (Hours)		10. REVIEWED AND FORWARDED (Date)			11. SIGNATURE OF CONTRACTING OFFICER			
100 days								
12.a ITEM NO.	b. DESCRIPTION OF ITEM	c. QUANTITIES		d. MATERIAL COST		e. LABOR COST		F. TOTAL COST
		NO. OF UNITS	UNIT	UNIT COST	COST	UNIT COST	COST	
27.	Wood Doors	3	EA	114	342	450	1,350	1,692
28.	Aluminum Window	1	EA	91	91	45	45	136
29.	Glazing	125	SF	14	1,750	13	1,625	3,375
30.	Locksets	5	EA	175	875			875
31.	Gypsum Board	142	LF	0.55	78	1.5	213	291
32.	Painting	670	SF	0.25	168	0.80	536	704
33.	Toilet Access	3	EA	45	135	20	60	195
34.	Stucco	8	SY	5	40	290	2320	2360
35.	Ceramic Tile	6	LF	5.5	33	10	60	93
36.	Water & Waste RGH	L.S.		1,030	1,030	1,097	1,097	2,127
37.	Sewer Line	36	LF	6	216	40	1,440	1,656
38.	Water Line	60	LF	6	360	25	1,500	1,860
39.	Fixtures	3	EA	340	1,020	400	1,200	2,220
40.	OH Electric	L.S.		6,200	6,200	7,048	7,048	13,248
41.	U.G. Electric	L. S.		2,840	2,840	3,970	3,970	6,810
42.	Outlets, Fixtures	6	EA	227	1,362	400	2,400	3,762
43.	Panel Board	1	EA	454	454	300	300	754
							TOTAL	181,089

**INSTRUCTOR'S KEY**  
**CE-6.2, PART C**  
**CONTRACTOR'S INVOICE**

INVOICE DATE APR 5, 1991  
INVOICE NUMBER 3

**FROM:**

**TO:** Construction Contract Administration Office

**VIA:**

1. Below is a Statement of Performance under Contract 47408-90-C-492 at (Station):

Contracting Office, Seaside, CA

The enclosure provides breakdown of this statement of performance.

A.	Total value of contract through change	\$	<u>181,089</u>
B.	Percentage of performance complete		<u>45.5%</u>
C.	Value of completed Performance	\$	<u>82,446</u>
D.	Less: Total of prior invoices	\$	<u>40,923</u>
E.	Amount this invoice	\$	<u>41,523</u>

Signature and Title \_\_\_\_\_

**FIRST ENDORSEMENT**

Date: APR 1, 1991

**FROM:** Construction Office, Port Hueneme, CA

**TO:** Payment Center

1. Payment is recommended as follows:

A.	Amount of work completed to <u>APR 4, 1991</u>	\$	82,446
B.	Less:		
	Retention	\$	<u>4,152 (10%)</u>
	Other Deductions	\$	<u>200 (disallowance)</u>
		\$	<u>4,352</u>
C.	Sub-total	\$	78,094
D.	Less previous payments	\$	<u>40,923</u>
E.	Recommended amount for <u>3rd</u> payment.	\$	37,171

2. Elapsed contract time APPROX 70%

3. SIGNATURE AND TITLE \_\_\_\_\_

Pursuant to authority vested in me, I certify that this invoice is correct and proper for payment.

Date \_\_\_\_\_

Signature and Title \_\_\_\_\_

<sup>1</sup>Authorized Certifying Official

ACRN	APPN/SUBHEAD	OC	BCN	SA	AAA	TT	PAA	COST CODE	AMOUNT
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CE-7.4

1. Sketch out the "history of delays" of the project on the following :

**DAYS**

0	40	80	120	160	200	240

2. Determine the following:

- |                             |       |      |
|-----------------------------|-------|------|
| a. Contractor Caused Delays | _____ | Days |
| b. Government Caused Delays | _____ | Days |
| c. Excusable Delays         | _____ | Days |
| d. Concurrent Delays        | _____ | Days |

3. Draw the time analysis schedules on the following:

	<b>DAYS</b>											
	0	40	80	120	160	200	240					
AS PLANNED	-----											
AS COULD HAVE BEEN	-----											
PROPERLY EXTENDED	-----											
AS BUILT	-----											
ADJUSTED	-----											

4. Determine the following:

- |                            |       |      |
|----------------------------|-------|------|
| a. Days Time Extension     | _____ | Days |
| b. Days Extended Overhead  | _____ | Days |
| c. Days Liquidated Damages | _____ | Days |



# INSTRUCTOR'S KEY TO CE 7.4 (Graph Solutions on Viewgraphs)

1. Sketch out the "history of delays" of the project on the following (VG 7-9):



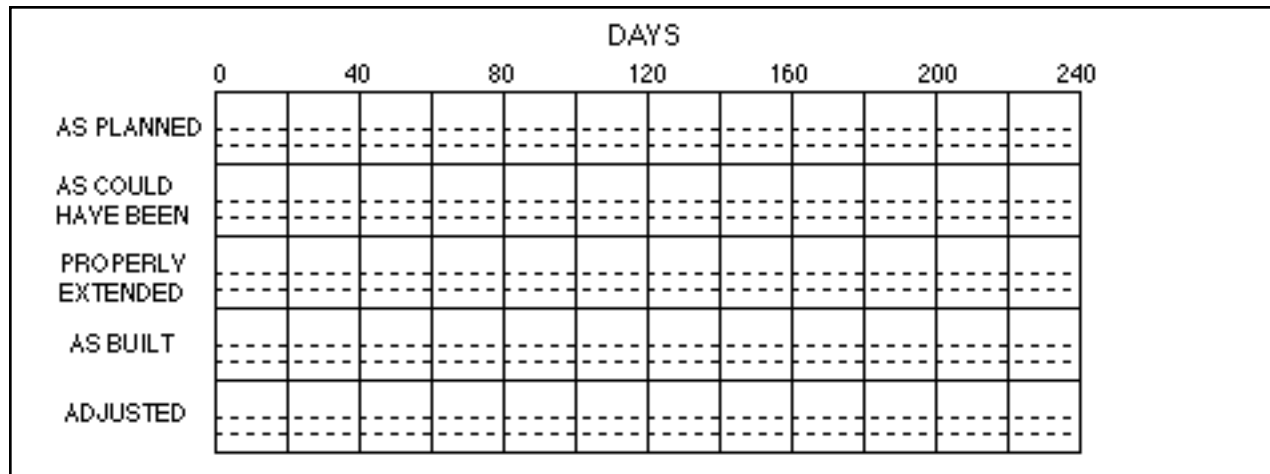
\* Strike is NOT a delay since it happens during the Float time.

2. Determine the following (VG 7-10):

ANSWER

a. Contractor Caused Delays	<u>40</u> Days	K = Contractor
b. Government Caused Delays	<u>20</u> Days	G = Government
c. Excusable Delays	<u>10</u> Days	E = Excusable
d. Concurrent Delays	<u>20</u> Days	C = Concurrent



3. Draw the time analysis schedules on the following (VG 7-11):







4. Determine the following (VG 7-12):

ANSWER

a. Days Time Extension	<u>50</u> Days	[ G + E + C ]
b. Days Extended Overhead	<u>20</u> Days	[ G ]
c. Days Liquidated Damages	<u>10</u> Days	[As built (240) - Extension (50) - Contract Allowance (180) = 10 ]

REF	STEPS IN PRESENTING THE TOPIC	INSTRUCTOR NOTES
	<ul style="list-style-type: none"> <li>• <b><u>Questions:</u></b> Can anyone describe the reasons why this isn't always possible?</li> </ul> <p><b><u>Answer:</u></b> The main reasons are:</p> <ol style="list-style-type: none"> <li>1. It is sometimes impossible to determine all of the relevant material, delay, and labor costs in advance.</li> <li>2. Delay costs and impact are difficult to assess in advance.</li> </ol>	
	<p>In pricing claims for equitable adjustments it is up to the contractor to provide proof that the costs are reasonable. It cannot be based on presumptions.</p>	
	<ul style="list-style-type: none"> <li>• <b><u>Questions:</u></b> If it is up to the contractor to prove that costs are reasonable, what is the best method of meeting this requirement?</li> </ul> <p><b><u>Answer:</u></b> By providing records which have been maintained, segregating the actual costs incurred as a result of the modification.</p>	
	<p><b>Tell the class:</b> There is more than one method of determining reasonable costs. Some are preferred over others by the Government and the courts.</p> <p>We will briefly explain them here.</p> <p>The least preferred method by the boards is the TOTAL COST METHOD which is described below.</p>	

REF	STEPS IN PRESENTING THE TOPIC	INSTRUCTOR NOTES
	<p style="text-align: center;"><b>CLASS EXERCISE CE-8.7, "The Retaining Wall Addition"</b></p> <p style="text-align: center;"><b>Case Study</b></p> <p><b>Time:</b> 3 1/2 hours</p> <p><b>Method:</b> Group Participation</p> <p><b>Instruction:</b> Students are to be given the assignment for this classroom exercise on the 2nd Monday of classroom study. Tell the class that the assignment is given to them in advance in order for them to do some individual study prior to the actual time for the group classroom exercise which is scheduled for the afternoon of Thursday of the second week of instruction. In order to prepare for the exercise tell the students to read through the exercise.</p> <p>The exercise is based on the premise that the students have taken courses in, or have a working knowledge of Cost and Price Analysis. It is also based on the premise that they are able to understand the CPM scheduling and methods for determining overhead rates by reading the information contained in Appendix A and B of the Text/Reference. The instructor must be well prepared to offer either individual or group instruction on the exercise during the allotted study period preceding the day of the exercise, or after class, if needed.</p> <p>On Thursday afternoon at the scheduled time for the exercise, break the students up into their respective groups.</p>	
	<p><b>The instructor will lead the class through the exercise step by step so that the students get a feeling for how the process should work.</b></p> <p>Start the students off by reviewing the scenario from page CE 8-15. They can get an idea of how much the modification should cost by looking at the original contract requirements and the requirements of the modification.</p>	

REF	STEPS IN PRESENTING THE TOPIC	INSTRUCTOR NOTES
	<p style="text-align: center;"><b>CLASS EXERCISE CE-8.7, "The Retaining Wall Addition" (Continued)</b></p>	
	<p><b>Lead the class through this logic:</b></p> <p>The original contract amount is \$2,287,350 which was for the construction of 1000 feet of seabreak. The scope of the modification indicates that an additional 100 feet of seabreak (retaining wall) is needed. This is a 10% increase over the original contract scope.</p> <p>As a reference or bench mark we can say that a 10% increase in the scope should translate to a 10% increase in the cost of the work. Therefore, <math>\\$2,287,335 \times .10 = \\$228,734</math> can be used as a reference or benchmark in determining price reasonableness. Some factors which could reasonably increase or decrease this cost should be discussed at this time, i.e.,</p> <ol style="list-style-type: none"> <li>a. If the modification was not initiated until after the contractor had started to demob, additional mobilization cost could increase the cost.</li> <li>b. If the modification is done immediately after start-up, the contractor may be experiencing normal start-up delays associated with learning curves and argue for higher cost based on these initial start-up inefficiencies.</li> <li>c. If the contractor has run into a lot of unforeseen site conditions, the price of the modification will be higher in proportion to the changes accumulated on the original work.</li> </ol> <p>Not all modifications will be this straight forward, however, all modifications should be looked at in a general sense before breaking them apart for analysis. <b>This common sense approach can prevent cost unreasonableness in most situations.</b></p>	



## **AUDIT INFORMATION (continued)**

1. The audit report reflected some differences between the audited rate and the proposed rates on all three categories.
2. Neither the proposal or the audit identified costs as "judgmental" or "actual".
3. There were no discrepancies concerning units (i.e. cy, cf, etc.) and there were no identifiable "lump sum" costs.
4. The audit revealed that adequate subcontractor documentation was sufficient.
5. Overhead was found to be broken down between field and home office.
6. Labor costs, labor hour discrepancies were noted.
7. Material cost discrepancies were also noted.